

WHAT IS CLAIMED IS:

1. A process for welding a Ti material and a Cu material comprising:
interposing a welding Cu material, including a tertiary metal as a
component, between a Ti material and a Cu material;

5 said tertiary material being of a type which performs one of the following:

 reduces a three-element eutectic temperature of the Ti, the
Cu and said tertiary metal below a eutectic temperature of said Ti
and the Cu; and

10 produces a reaction which causes a liquid phase at a
temperature that is lower than a two-element eutectic temperature
between the Ti material and the Cu material;

 heating said Ti material and the Cu material to said temperature wherein
solid and liquid coexist; and

 maintaining said temperature long enough to form a welding portion.

15 2. A welding process of a Ti material and a Cu material according to claim
1, wherein the step of heating includes heating in a non-oxidizing atmosphere of
one of a vacuum, an inert gas, and a reducing gas.

 3. A welding process of a Ti material and a Cu material according to claim
1 wherein said tertiary metal is Sn.

20 4. A welding process of a Ti material and a Cu material according to claim
3, where said temperature is from about 700° C to about 887° C.

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5. A welding process of a Ti material and a Cu material according to claim 4, wherein a welding portion formed has Cu as a main body.

6. A welding process of a Ti material and a Cu material according to claim 5, wherein a welding portion formed includes at least 60 weight % Cu.

5 7. A welding process of a Ti material and a Cu material according to claim 1, wherein said welding Cu material is a foil or a powder.

8. A welding process of a Ti material and a Cu material according to claim 1, wherein the welding Cu material is composed of plating of said tertiary metal on a Cu foil.

10 9. A Ti-Cu composite plate having a welding portion formed by the process of claim 1.

204/298.12 10. A sputtering target backing plate wherein a Ti-Cu composite plate of the claim 9 is used to bond the target member on the side of the Cu material.

15 11. A sputtering target backing plate, wherein said welding Cu material includes a foil Cu material having thereon at least one of a coating and a powder of said tertiary metal to improve wettability of said Ti material.

12. A sputtering target backing plated according to claim 11, wherein said tertiary metal is Sn.

13. A process for forming a plate including:
interposing a tertiary metal between a Cu material and a Ti material;
said tertiary metal being of a type which reacts with at least one of Cu and
Ti to reduce a melting temperature below a temperature of an eutectic temperature
of said Cu and Ti material; and
5 holding said materials at said temperature for a time sufficient to obtain
welding.
14. A welding process of a Ti material and a Cu material according to
claim 6, wherein said welding Cu material is a foil or a powder.
- 10 15. A welding process of a Ti material and a Cu material according to
claim 6, wherein the welding Cu material is composed of plating of said tertiary
metal on a Cu foil.